AP CHEM ASSIGNMENT SHEET #4

STATES OF MATTER

Part I Gas Behavior and the Gas Laws

Read chapter 5 from Chang. The picture (but not the accompanying description) in Figure 5.19 on page 203 sums up chemistry nicely; I'm sure you'll agree.
Note the *Chems in Action* on page 198. Note Figures 5.2, 5.3, 5.4, 5.5, 5.6, and 5.22.

LOTS of practice problems here. Excuse redundancy, please. From pages 210-218:
7, 10, 12 (duh), 14, 16, 17, 18, 20, 22, 23, 24, 25, 26, 27, 29, 32, 33, 34, 35, 36, 38, 40, 42, 44, 46, 47, 48, 49, 50, 51, 52, 54, 57, 60 (for you pyros), 63, 64, 66, 68, 74, 156, 78, 86, 90, 91, 92, 122, 94, 100, 106, 107, 116 (fruity), 118, 124 (tabloid news), 127 (more tabloid news), 128 (more fun), 131 (the weather channel), 138 (even more fun), 141, 145, 151, and for your masochistic pleasure, try 142…

From your APQ packet, look at questions **5 abcd**, **26**, **46**, **51 ab**, **52 a**, and **68.**
And here are a few additional older AP question:

Q 401

a.) From the standpoint of the kinetic-molecular theory, discuss briefly the properties of gas molecules that cause deviations from ideal behavior.

b.) At 25 °C and 1 atm pressure, which of the following gases shows the greatest deviation from ideal behavior? Give two reasons for your choice.

CH_4 SO_2 O_2 H_2

c.) Real gases approach ideality at low pressure, high temperature, or both. Explain these observations.

Q 402

The van der Waals equation of state for one mole of a real gas is as follows: $(\frac{P+a}{V^2})(V-b)=RT$

For any given gas, the values of the constants *a* and *b* can be determined experimentally. Indicate which physical properties of a molecule determine the magnitudes of the constants *a* and *b*. Which of the two molecules, H_2 or H_2S, has the higher value of *a* and which has the higher value of *b*? Explain.

Q 403

The vapor density of a compound at 27 °C and 750 mm Hg is determined to be 3.53 grams per liter. Calculate the molecular weight (molar mass) of the compound.

Part II is on the reverse!

Part II IMFs, Liquids, and Solids

From Chang, read section 1.5 as well as chapter 11.
Check out the cool *Chems in Action* on pages 463, 476, 478, 490, and 491.
Note Figures 11.17 and 11.22.

For you Chang buffs, from pages 494-501, answer the following:
1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 14, 16, 18, 22, 24, 25, 27, 28, 29, 30, 31, 38, 42, 44, 47, 48, 49, 50, 51,52, 53, 56, 57, 58, 60, 62, 64, 65, 66, 67, 68, 69, 70, 72, 73, 77, 78, 79, 80, 81, 82, 84, 86, 88, 90, 91, 93, 94, 96, 99, 100, 102, 103, 104, 107, 109 (nice kettle), 112, 113, 122, 126, 127, 133 (ask Coakley to do this if he hasn't done so already), 134, 135 (go Mr. Tran), 136 (are you kiddin' me?), 137

From the APQ packet, answer questions **2 d**, **16**, **38 a**, **50 a**, **60**, **65 bc,** and **67 b.**
And answer the following old AP question:

Q 404

Explain each of the following in terms of atomic and molecular structures and/or intermolecular forces.

a.) Solid K conducts an electric current, whereas solid KNO_3 does not.

b.) The normal B.P. of CCl_4 is 77 ^oC, whereas that of CBr_4 is 190 ^oC.

c.) Under ordinary conditions, HF (normal B.P. = 20 ^oC) is a liquid, whereas HCl (normal B.P. = -114 ^oC) is a gas.

d.) The normal B.P. of butane, $CH_3CH_2CH_2CH_3$, is 0 ^oC, whereas that of chloroethane, CH_3CH_2Cl, is 12 ^oC.